

Forward Area Air Defense Command, Control, Communications, and Intelligence (FAAD C3I) System

The Forward Area Air Defense Command, Control, Communications, and Intelligence (FAAD C3I) system is a network of components that connect command posts, weapons, and sensors of the Army's divisional air defense units. The Ground-Based Sensor (GBS), also called Sentinel, provides air surveillance, target acquisition, and target tracking information to the weapons in the FAAD Battalion. FAAD C3I is part of the Army Battle Command System. FAAD C3I consists of computer hardware, software, and communications that provide command, control, targeting, and other information to air defenders on the battlefield and a shared common air picture with other Army, Joint, Allied, and Coalition air and missile defense systems. FAAD C3I software performs air track and battle management processing functions and uses Single-Channel Ground and Airborne Radio System, the Joint Tactical Information Distribution System, and the Enhanced Position Location Reporting System (EPLRS) for communications. The Sentinel TPQ-36A radar is a three-dimensional radar system using a phased-array antenna and an Identification Friend or Foe device. The GBS/Sentinel system is mounted on a High Mobility Multi-Purpose Wheeled Vehicle with a towed trailer.

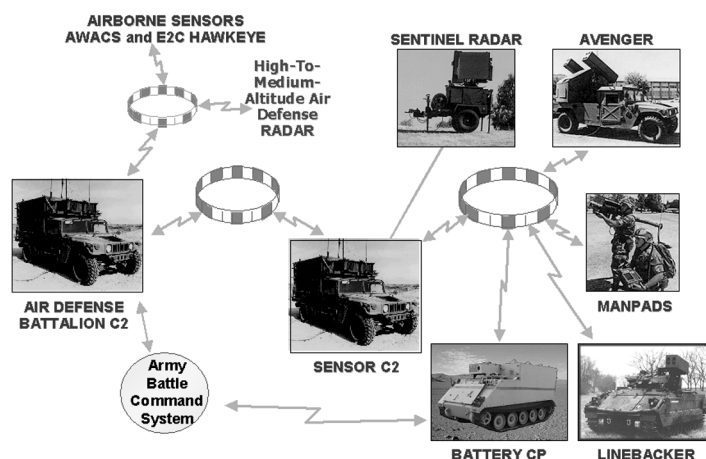
TEST & EVALUATION ACTIVITY

The FAAD C3I Limited User Test (LUT) was conducted at Orogrande Range at Fort Bliss, Texas, in February and March 2002. The LUT tested version 5.2 of the FAAD C3I system.

TEST & EVALUATION ASSESSMENT

The FAAD C3I and GBS systems have significantly enhanced the accomplishment of low-altitude, short-range air defense missions when compared to previous capability. The ability of STINGER-equipped units to engage hostile aircraft at longer ranges, particularly before threat aircraft ordnance release, offers greatly improved protection of friendly ground units. However at longer ranges, positive identification of unknown aircraft is more difficult; and fratricide, first observed during the 1994 Initial Operational Test and Evaluation (IOT&E), continues to be a serious concern for the combined Air Defense Artillery force (Airborne Warning And Control System, F-16 aircraft, AEGIS, Patriot, Marine Corps short range air defense weapons/crews, and FAAD C3I/Sentinel). Analysis by the Army found that many of the fratricide problems involved leadership, training, and soldier performance issues as opposed to technical system performance. However, the inability of electronic identification devices to correctly identify all friendly aircraft requires soldiers to visually identify all unknown aircraft as either friend or foe.

The FAAD C3I LUT in 2002 re-examined fratricide issues and addressed several new issues that relate to the use of the Force XXI Battle Command, Brigade and Below (FBCB2) V4 computer. Army Test and Evaluation Command evaluated the FAAD C3I version 5.2 software as being operationally effective, suitable with limitations, and survivable. Upgrades from Block II version 4.0, the last time an operational test was performed, continue to enhance capabilities in both engagement and force planning operations. There were two fratricide incidents in the LUT out of 355 engagements, both attributed to operator training. Other concerns identified include a miscorrelation



The Forward Area Air Defense Command, Control, Communications and Intelligence system is a network of components that connect command posts, weapons, and sensors of the Army's short-range air defense units. It provides a shared common air picture with the Air Force, Navy, and the Patriot Missile System.

ARMY PROGRAMS

problem when a FAAD C3I local track intersects with an externally generated track received over the Joint Data Network from a Joint Surveillance Target Attack Radar System or Airborne Warning And Control System platform. There are also hardware and software issues with the use of the FBCB2 computer in the firing units that have been identified and must be corrected to ensure viability of the air defense mission. Other hardware and software issues remain to be corrected by the Program Office from tests conducted in 1997, 1998, and 1999.

The capability of the tactical internet to support the movement of information within an Army division in a timely manner remains an issue. In past events, the size of the tactical internet appears to interfere with getting air track information from the FAAD sensors to the FAAD shooters. During the Division Capstone Exercise 1 (DCX1) exercise in 2001, the overall message completion rate was approximately 50 percent. There were approximately 300 EPLRS radios during the DCX1 exercise. During the FBCB2 Field Test 3 in FY00, where only a slice of the network (85 EPLRS radios) was present, there was no significant degradation in message completion rates. The FY02 FAAD C3I LUT has a communications network of only 20 EPLRS radios making it impossible to resolve this issue. Recent improvements in EPLRS, specifically the use of multi-source group needlines, should allow air track data to get to the intended recipients without competing with other non-real time traffic on the FBCB2 network. The FAAD evaluation community is aware of the communications network issue and is looking at alternative sources of data such as the FBCB2 IOT&E to help address this issue.

The Air and Missile Defense Workstation (AMDWS) is a portion of the FAAD C3I system that provides data on force operations to the Army's air defense units and the rest of the Army via the Army Battle Command System. AMDWS is part of the Air and Missile Defense Planning and Control System (AMDPCS). There are several different configurations and several software versions of AMDWS in the field. The Program Office has developed software patches to make these various elements compatible. Most of the fielded AMDWS software versions have not been formally tested. The operational requirements document was approved in 1997 and has been under revision. Critical operational issues and criteria are under development, but have not been approved. As a result, there is no approved Test and Evaluation strategy nor acquisition program for AMDPCS/AMDWS.

Future upgrades to the FAAD C3I system and Sentinel radar are aimed at allowing divisional air defense units to conduct beyond visual range engagements. This new capability will rely on enhanced tracking and classification capabilities of the Sentinel and on the ability of the FAAD C3I system to perform fire control by assigning particular weapons systems to engage specific targets.